

Measles is in the news yet again

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ABSTRACT

The purpose of this article is to communicate a sense of urgency to healthcare providers, particularly those in the United States, to not take recent news reports of new outbreaks of measles in some parts of the country lightly. Measles is a highly contagious killer disease with no racial or age discriminations. It can have disastrous effects on the quality of life of the patients, their families, and the country. Before implementation of the National Measles Vaccination program in 1963, approximately 500,000 persons in the United States were reported to have had measles every year, of whom 500 died, 48,000 were hospitalized, and another 1,000 had permanent brain damage (Seward, 2014). Through an effective two-dose measles vaccination program, measles was curtailed in the United States, and in the year 2000, measles was declared eliminated from the country. "Eliminated" means the absence of continuous transmission of measles for 12 months or more in a specific geographic area. While it is obvious that measles is no longer endemic in the United States, measles is imported into the country every year, mostly by US residents returning from travel abroad. This is probably responsible for the 107 newly confirmed cases in 21 states as of July 14, 2018 (Chodosh, 2018). If the figures from the Center for Disease Control and Prevention are to be believed (and they are), then chances are high that no matter where you are in the country, a case of measles might just show up in your consulting room.

Keywords: Healthcare providers, measles, vaccine

Introduction

Herein, I take a whirlwind tour of some details of the disease, inter alia, the cause, mode of transmission, risk factors, pathogenesis, clinical features, diagnosis, management, complications and prevention. Measles – also known as Rubeola – is caused by the measles virus. The virus lives in the nose and throat of an infected person. When he coughs or sneezes, it gets in the air and can survive there for up to 2 h. Anyone who breathes in or swallows the virus (infected air or droplets) in the airspace gets infected too. Measles is so contagious that if 1 person has it, 9 of 10 people who are not immune and share living space with the infected person will catch it. Risk factors for measles virus infection include immunodeficiency caused by HIV or AIDS; immunosuppression following receipt of a stem-cell transplant, alkylating agents, or corticosteroid therapy, regardless of

immunization status; travel to areas where measles commonly occurs or contact with travelers from such areas.

Pathogenesis

From the nose and/or throat, the measles virus moves to bind to the epithelial cells of the trachea or bronchi. Surface proteins on the virus, called hemagglutinin, facilitate this binding process. Once bound, the virus fuses into the membranes and eventually gets inside the host cells. In there, the negative sense single-stranded RNA virus undergoes transcription into positive sense mRNA strands. They are then translated into newly made virus and sent out of the cells to the nearby lung tissue in a matter of days. They get picked up by macrophages and dendritic cells and spread to more lung tissue, the blood, brain, intestines, and other organs.

Now that we know how the measles virus works in the body, it should be fairly easy to understand why infected patients exhibit the signs and symptoms they exhibit.

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Clinical Features

It takes between 10 and 14 days for clinical features to develop after one is exposed to the virus. These features tend to last for 7–10 days. Typically, there is a prodromal phase of a 4- to 7-day fever (as high as 104°F), cough, conjunctivitis (pink eye), and coryza (inflammation of the mucous membrane lining the nasal cavity, leading to sneezing, running nose, stuffy nose, head cold, fever) and Koplik's spots. Koplik's spots are small white spots that appear on the inside of the cheeks opposite the molars. They are temporary, and hence may disappear by the time the patient presents in the consulting room. Recognizing these Koplik's spot before the patient reaches maximum infectiousness is precious as interventions at this point can markedly reduce the spread of the disease.

Then comes the measles rash. It is maculopapular (flat areas of the skin covered by small bumps), appears 14 days after the person has been exposed, and changes color from red to dark brown before disappearing. Patients are considered to be contagious from 4 days before to 4 days after the rash appears. The measles rash, which lasts for up to 8 days, characteristically spreads from the head to the trunk, palms of the hands, and to the soles of the feet before gradually receding first from the face and last from the thighs and feet.

Complications

Some patients recover completely, whereas others suffer from complications including diarrhea, pneumonia (either direct viral pneumonia or secondary bacteria pneumonia), bronchitis (either direct viral bronchitis or secondary bacterial bronchitis), otitis media, and encephalitis. A complication that may occur 7–10 years after the acute phase of the disease is subacute sclerosing panencephalitis, a fatal degenerative disease of the central nervous system.^[1] In addition, measles has the potential to suppress the immune system for weeks to months, and this can contribute to bacterial superinfections such as otitis media and bacterial pneumonia. People who are at high risk for complications are as follows: infants and children less than 5 years of age, adults over 20 years of age, pregnant women, and people with compromised immune systems, such as from leukemia, tuberculosis, and HIV infection.

Management

You should have a high suspicion for measles in all patients who present with febrile rash associated with cough, coryza, and/or conjunctivitis especially if they have a history of having recently traveled abroad or were exposed to someone who recently travelled abroad and not been vaccinated against measles. Suspected cases should be quickly isolated and reported to the health department. Obtain blood or saliva specimen for antibody and genotype tests.

Currently, there is no known specific antiviral treatment for measles. Medical management is, however, targeted at treating superinfection, ensuring adequate hydration and analgesia.

Prevention

Measles infection is prevented with a three-in-one vaccine called the measles–mumps–rubella vaccine (MMRV), one dose of which is approximately 93% effective at preventing measles and two doses are approximately 97% effective. The first dose of the MMRV, according to Center for Disease Control and Prevention (CDC)'s recommendations, should be administered to children at 12–15 months of age and the second at 4–6 years of age or at a minimum of 28 days interval between doses. Adults born during or after 1957 in the United States who do not have evidence of immunity against measles should get at least one dose of MMRV.

Note, however, that the MMRV is contraindicated in the patient (adult or child) who has any severe, life-threatening allergies; is pregnant or thinks she might be pregnant; has a weakened immune system; has gotten any other vaccines in the past 4 weeks; or has recently had a blood transfusion or received other blood products.

The CDC's Advisory Committee on Immunization Practices (MMWR 2011) has recommended that "all persons who work in health-care facility should have presumptive evidence of immunity to measles.^[2] This information should be documented and readily available at the work location. The presumptive evidence includes: written documentation of vaccination; doses of live measles or MMR vaccine administered at least 28 days apart; laboratory evidence of immunity; laboratory confirmation of disease or birth before 1957."

Conclusion

As long as we continue to have US residents traveling in and out of the country, persons who are yet to be vaccinated against measles, and persons living in communities where measles is currently occurring,^[3] healthcare providers should always have low threshold of suspicion for measles and act fast whenever it is suspected.

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Conflicts of interest

There are no conflicts of interest.

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